

Design Of An Educational Game For Numbers In Early Childhood With Android-Based Biometrics

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Abstract

Counting is learning from mathematics logical and ability sorting , counting and thinking in a way logical . Skills count very required in life everyday . Counting is also a skills base mathematics in Education . Purpose of Counting is For learn basics mathematics so that child Ready face learning more counting complex.media Conventional which is often used teacher in give lesson counting to child not enough effective due to the development of the electronic world at that time this . Therefore That Making a Counting Game This aiming For follow development of the times with develop a counting game that can used on android with use method biometrics as learning.Based on Trial the system that has been carried out by media experts and expert material get results like following 80% or very worthy by media experts and 75% or qualified by expert material . Testing Application This No only carried out by media experts and expert material just testing also conducted on students at KB TK AN NAHL. Test Results to 20 students of KB TK AN NAHL received results like following 85% very agree and agree , 14% less agree and 1% disagree using this game.

Keywords : *Counting, Counting Games, Biometrics.*

1. INTRODUCTION

Counting is learning from mathematics logical and ability sorting , counting and thinking in a way logical . Skills count very required in life everyday . Counting is also a skills base mathematics in Education. The Purpose of Numeracy is For learn basics mathematics so that child Ready face learning more counting complex [1] .

Development developing technology very rapid influence interest child on the system learning used . In reality in the field Still Lots found learning counting in children age early Still nature monoton with using conventional media or object in a way direct . Learning the make child age early Now become not enough interested Because Already exposed to developments existing technology [2] .

Games are one of the applications that follow development technology that is currently This develop very fast and popular from circles age early until Adults . Educational games is the right solution For make A innovation learning that can used in children age early . Educational game function Alone that is contains about education related materials with theme from the game .

Technology biometrics which is characteristics physique human being used For introduction humans found in fingerprints finger , iris , sound , image face , and shape hand [3] . Palm one hand member body that can used For technology biometrics in the form of fingerprint fingers . On the palm hand there is fingerprint finger which is one of the a relatively new feature studied For system introduction human [4] .

Android is A system intelligent robot operation designed can used with easy by humans from circles child age early until adult . regular android used on tablets and smartphones. Android which

uses code license in a way open make it easier manufacturer device soft modify and also distribute in a way free [5] .

Based on description problem above , then the idea came up for design and build an educational game counting with research entitled "DESIGN OF EDUCATIONAL GAMES FOR NUMBERS IN EARLY CHILDHOOD USING ANDROID-BASED BIOMETRICS" .

2. RESEARCH METHODS

2.1 Objects Study

Objects research on the problem This namely in place Study child age early in the form of IT AN NAHL Kindergarten and Faeyza Kindergarten Tutoring located in Kretek District , Bantul Regency .

2.2 Method of collecting data

Observation conducted at KB TK IT AN NAHL and interviews done to teachers and guardian of students of KB TK IT AN NAHL. For adjustment Contents material from game to child age early with do consultation to the relevant lecturer curriculum used . Questionnaires were also given to child after do testing application .

2.3 System Flowchart

To make it easier to read the flow of the application, it is necessary to create a flowchart. In this flowchart, each part has a function and use to achieve the target of the application [6]. The flowchart of the numeracy educational game for early childhood with Android-based biometrics is as follows:

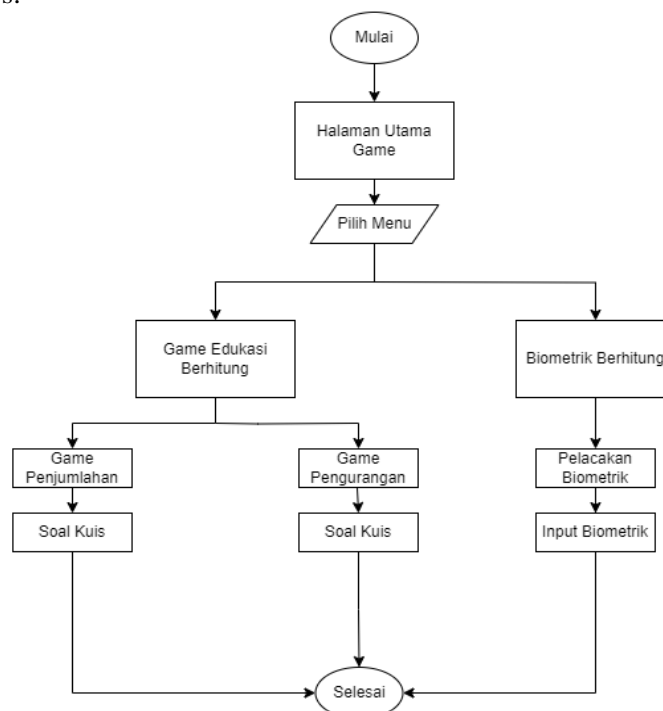


Figure 1 System Flowchart

2.4 Use Case Diagram

Use case diagram used For modeling business process based perspective system . There is two use cases contained in the research This that is in the form of user use cases and developer use cases.

2.4.1 Use Case Diagram User

Use Case Diagram User describe that user get a number of right in application For can operate application with easy . Use Case Diagram User made as simple as maybe so that the user can with easy understand .

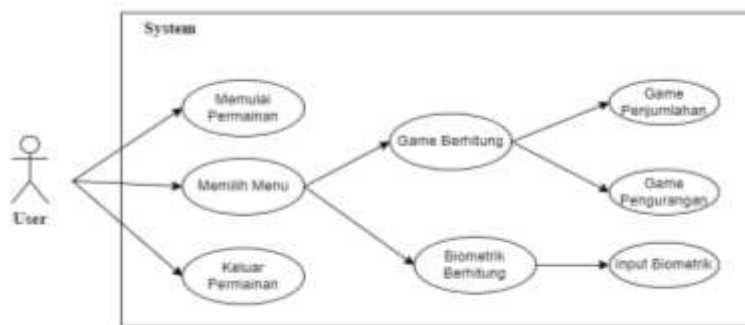


Figure 2 Use Case Diagram User

2.4.2 Use Case Diagram Developer

Use Case Diagram image used For modeling business process based perspective system . Game Developer Use Case Diagram can depicted as following :

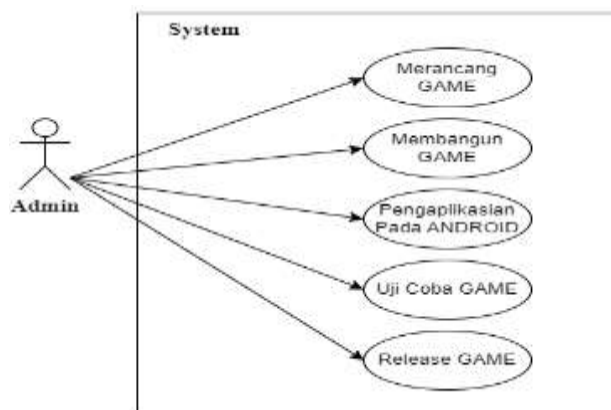


Figure 3 Game Developer Use Case Diagram

Game Developer Use Case Diagram is used For explain about the flow that is carried out game maker in to design until the game can released .

3. RESULTS AND DISCUSSION

The Home page is the first page that appears when application accessed . The Home page contains knob start as knob For start enter on page select menu and buttons *exit* as game cover .



Figure 4 Home Page

Select Menu page is animation For start game with choose according to the menu that will be played . On this menu there is two The menu options are counting games and biometric games .



Figure 5 Select Menu Page

Counting game page is appearance when *user* select the counting game menu on the display select menu. On the display This there is two menu options that have been available namely addition games and subtraction games .



Figure 6 Select Menu Page

The game page is appearance main game page containing quiz or question For user . On the page This user can answer in accordance questions that have been presented by the system .



Figure 7 Game Page

Biometric Game Page is display on the selected biometric Game menu on the page select menu. On the display This user use palm hand For interact with system . System will serve number in accordance finger palm hand shown by the user .



Figure 7 Biometric Game Page

Black Box testing is carried out by media experts and experts material . Testing done with method run the program that is intended For know that the program can walk with Good .

3.1 Media Expert Testing

Testing This conducted by lecturers mentor in the form of operate applications that have been made , with assessing 10 aspects . The results obtained from the test This that is :



Figure 8 Media Expert Testing

Got it results in the form of 60 % (6 questions) Agree and 40% (4 questions) Strongly agree .

3.2 Material Expert Testing

Testing This carried out by the Kindergarten Teacher KB IT AN NAHL in the form of operate applications that have been made , with assess 7 aspects . The results obtained from the test This that is :



Figure 9 Material Expert Testing

Got it results in the form of 7 % (1 question) Strongly Agree , 72% (10 questions) Agree , 14% (2 questions) Less Agree and 7% (1 question) Disagree .

3.3 Testing General Respondent / child

Testing This conducted on 20 children age early in the form of operate applications that have been made , with assess 7 aspects every children / respondents . The results obtained from the test This that is :



Figure 8 Questionnaire Results

Got it results in the form of 85 % (120 questions) very agree & agree , 14%(20 questions) less agree and 1%(1 question) disagree agree .

4. CONCLUSION

Applications designed and built on research This proven can walk with good and proper to be applied in learning child age early . Application this also has differentiator that is in the form of method biometrics as children's motoric triggers .

As for the advantages and disadvantages design build educational games counting in children age early with biometrics Android- based , namely :

4.1 Excess System

- System can used by students in Kindergartens and Early Childhood Education Parks .
- Learning counting in Early Childhood Education more interesting and effective .

4.2 Lack System

- Application can only be installed on the system android operations .
- Application use 2D animation that looks Not yet real .

5. SUGGESTION

Based on results research that has been done , there is some suggestions that can developed by researchers next that is :

- This game expected can Can developed become a more 3D game interesting and additional menus or other game genres.
- This game expected can Can developed by other researchers with addition numbers on method biometrics that have been made .

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